MOTION IMAGERY STANDARDS PROFILE

Department of Defense/Intelligence Community/ National System for Geospatial Intelligence (DoD/IC/NSG) Motion Imagery Standards Board

MISP-2020.1: U.S. Governance

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Change Log

2020.1	- Updated references [5], [7], [11], and [12] - No technical content modifications

1   Scope

This document outlines the mission, authority, management, responsibilities, and relationships of the Motion Imagery Standards Board (MISB). It also sets forth, the applicability of its standards to government members, and the guidelines for conformance and certification intended to enable interoperability across the Department of Defense/Intelligence Community/National System for Geospatial-Intelligence (DoD/IC/NSG).

2   Motion Imagery Standards Board (MISB) Mission

The mission of the Motion Imagery Standards Board is to:

- Ensure the development, application and implementation of standards that maintain interoperability and quality for Motion Imagery Systems in the DoD/IC/NSG.
- Oversee the NGA Conformance Program for Motion Imagery.
- Facilitate citation of standards in the DISR and the IC-ESB for community exposure and use.
- Support standardization efforts in NATO (North Atlantic Treaty Organization) furthering international interoperability.

Recommendations on baseline standards will comply with the technical goals of the Joint Enterprise Standards Committee (JESC) charter [1]. The MISB will monitor and participate in the implementation of related Motion Imagery standards in national and international arenas impacting the DoD/IC/NSG.

Whereas, Motion Imagery is recognized by the DoD/IC/NSG as a fundamentally important source of imagery intelligence, and whereas; improved battle-space/intelligence-space awareness using Motion Imagery sensors is identified as a key technology area; the mission of the MISB is to ensure the development, application and implementation of standards that enable capabilities and maintain interoperability for Motion Imagery, metadata, audio and other related systems in the DoD/IC/NSG.

The MISB monitors and participates in the development of commercial standards and assess their impacts on systems and DoD/IC/NSG architectures through community dialogue. In addition, the MISB participates in the NATO Standards Agreement (STANAG) process for coalition force interoperability, and participates in US and international standards bodies to monitor, advocate, and represent DoD/IC/NSG interests for Motion Imagery, metadata, audio, and related systems that further global interoperability.

This DoD/IC/NSG Motion Imagery Standards Profile (MISP) is a direct expression of the MISB mission and serves as the master baseline standards document prepared and managed by the MISB. The DISR and the Intelligence Community Enterprise Standards Baseline (IC-ESB) both reference the MISP which yields seamless international interoperability for coalition force operations. All DoD/IC/NSG organizations with interest in Motion Imagery technologies are encouraged to participate in MISB activities and represent their specific requirements and issues.

3 Authority

3.1 National Geospatial-Intelligence Agency (NGA)

Per Department of Defense Instruction 3115.15 Appendix A *Geospatial Intelligence (GEOINT)* [2], which establishes policies, assigns responsibilities, and provides guidance for GEOINT operations within the DoD, it is DoD policy that:

- "GEOINT operations and activities shall be treated as high priority efforts and conducted in a unified and synchronized manner, due to the vital role GEOINT plays in the successful conduct of military operations and activities, in executing the mission of the DoD, and in supporting national security.

- Guidance to the National System for GEOINT (NSG) and operation of a unified community for GEOINT activities and capabilities, in accordance with DoDD 5105.60 [3], shall be provided by the D/NGA, acting concurrently as the DoD GEOINT Manager and as the GEOINT Functional Manager pursuant to EO 12333 [4], United States Intelligence Activities.

- GEOINT conducted under the authority of the SecDef shall comply with NSG strategic guidance, policies, and procedures issued by D/NGA, acting concurrently as DoD GEOINT Manager and as GEOINT Functional Manager."

NGA responsibilities to include:

- "Standardize GEOINT equipment, applications, processes, and facilities to maximize interoperability … in coordination with the DoD Components.

- As the Component Manager for the NGA MIP [Military Intelligence Program] … and as the PM for the NGP [National Geospatial-Intelligence Program] as directed by the DNI, shall provide technical advice, assistance, and guidance to the MilDeps and COCOMs for tactical GEOINT investment programs to ensure interoperability between existing and future … GEOINT systems, connectivity … and modernization of systems.

- Confirm the integration of GEOINT standards and architectures in DoD GEOINT and GEOINT-related systems."

3.1.1 DoD GEOINT Manager

In accordance with Department of Defense Directive 5105.60, which updates the mission, organization and management, responsibilities and functions, relationships, authorities, and administration of NGA; and whereas:

"NGA shall support U.S. national security objectives by providing timely, relevant, and accurate geospatial intelligence (GEOINT) to the Department of Defense, the Intelligence Community (IC), and other U.S. Government (USG) departments and agencies … operating, and maintaining systems related to the processing and dissemination of GEOINT; and providing GEOINT in support of the combat objectives of the Armed Forces of the United States.

The Director, NGA, serves as the DoD GEOINT Manager, conducting all GEOINT activities delegated under the authorities of the Secretary of Defense and the USD (I). The Director,

NGA, shall also advise the DNI and the Director of Defense Intelligence (DDI) … on all matters under the purview of the DNI concerning GEOINT and serves as the GEOINT Functional Manager… D/NGA shall:

- Coordinate with the DoD CIO, the USD (AT&L), the DoD Enterprise Architecture for IT standards, and the CJCS and other DoD Component heads to establish processes and procedures for enforcing GEOINT standards compliance IAW DoDI 8310.01 [5] Information Technology Standards in the DoD.

- Disseminate and facilitate sharing of GEOINT by the most efficient and expeditious means consistent with DoDI 8320.02 [6] and DoD and Office of the Director of National Intelligence (ODNI) security and information sharing policies and procedures.

- Serve as the DoD Lead for GEOINT standards and prescribe, mandate, and enforce standards and architectures related to GEOINT and GEOINT tasking, collection, processing, exploitation, and international geospatial information for the DoD Components IAW DoDI 8330.01[7] and for the non-DoD elements of the IC … to include:

  - Standards for end-to-end architectures and embedded interfaces related to GEOINT.
  - Standards for GEOINT collected or produced within the Department of Defense.
  - Technical guidance and direction to the DoD Components and other components of the NSG regarding standardization and interoperability of systems requiring, exploiting, and/or disseminating GEOINT.
  - Review of GEOINT components of Information Support Plans and to verify the Net-Ready Key Performance Parameter (N-R KPP) is adequately defined for GEOINT.

- Represent the Department of Defense in national and international geospatial information standardization activities.

- Lead and provide functional management guidance to the NSG, including the issuance of doctrine, standards, policies, directives, and procedures required for GEOINT."

3.1.2 GEOINT Functional Manager

In accordance with Intelligence Community Directive Number 113 *Functional Managers* [8] on roles, responsibilities, obligations, and authorities of Functional Managers;

IC Elements shall:

- "Participate in the coordination of and comply with function-related standards set by the Functional Manager."

DNI delegates authority to Functional Managers to:

- "… (prescribe) function-specific interoperability standards for function-dependent technical architectures …
- Promote interoperability across the function's information domains and activities and enhance the efficiency and effectiveness of the function by developing a functional enterprise architecture …
- Develop, coordinate, and oversee the issuance and implementation of IC standards in training and tradecraft, reporting, requirements, evaluation measures, and other areas

within their respective functions as determined by the DNI. Functional Managers shall monitor conformance with standards issued.

- Promote interoperability between existing and future function-related systems."

3.2 Joint Enterprise Standards Committee (JESC)

In March 2013, the Joint Enterprise Standards Committee (JESC) Charter was signed and is co-chaired by the DoD CIO and the DNI CIO.

"The JESC serves as the Department of Defense information technology (IT) standards and Intelligence Community enterprise standards governance body. This forum collaborates and recommends common enterprise standards, profiles, and specifications for the respective DoD and IC information environments. … It shall also standardize procedures for categorizing, documenting, adopting, and implementing enterprise standards, profiles, and specifications while eliminating duplicative aspects of the respective DoD and IC-ESB. … Moving forward under the JESC, the DoD and IC will share governance processes, where possible, to increase efficiencies and effectiveness of the enterprise standards baselines and to further leverage resources and processes by combining the governance of enterprise standards, profiles, and specifications. Through this collaborative partnership, the IC and DoD will achieve improved unity of effort, economies of scale, quality and speed of decision making, increased adaptability of resources, improved situational awareness, and greater precision in mission planning and execution."

Specifics from the JESC charter:

- Advise and support the DoD CIO and IC CIO on enterprise standards, profiles, and specifications related to data, services, networks, and security infrastructures that impact the DoD and IC.
- Support enterprise architectures through technical standards and profiles.
- Raise uniform awareness and understanding of enterprise IT standards, profiles, and specifications within the DoD and IC.
- Enhance participation of sponsors, stakeholders and subject matter experts (SMEs) in the evaluation of enterprise IT standards, profiles, and specifications.
- Establish, update, publish, maintain, and make accessible the baseline set of enterprise standards, profiles, and specifications to authorized parties.
- The DoD CIO and IC CIO are the final approving authority for enterprise standards, profiles, and specifications within the respective DoD and IC enterprises.
- The JESC shall direct and oversee subordinate committees, working groups, and ad-hoc enterprise standards activities.

NGA is a member of the JESC representing both DoD and IC interests. The Geospatial Intelligence Standards Working Group (GWG), which the MISB operates under, is organized under NGA and the JESC as indicated in Figure 1.

3.3 NGA/Geospatial Intelligence Standards Working Group (GWG)

The GWG is the NSG forum that serves the NGA Director and the NGA CIO. The GWG serves as a U.S. DoD, IC, Federal, and Civil community-based forum to advocate for IT standards and

standardization activities related to GEOINT. In this capacity, the GWG supports the Director, NGA and the NGA Chief Information Officer in carrying out GEOINT Functional Manager responsibilities. The GWG serves as the standards-focused forum for the NSG community to address and advance GEOINT standards requirements. To further the development, coordination, and promulgation of GEOINT standards, the GWG provides community leadership and management of GEOINT standardization activities for the NSG. In its coordinating and advisory role, GWG activities extend to all aspects of GEOINT standardization, to include but not limited to issues related to GEOINT standards identification, adoption, promulgation, implementation, conformance, and education.

The GWG concentrates on GEOINT standards and standardization activities related to enabling technologies, data architecture, and software tools that enhance interoperability in net- and data-centric environments. In most instances, the GWG focuses on standards in three Service Areas: GEOINT: Geospatial, GEOINT: Motion Imagery and GEOINT: Still Imagery. In addition, each active standard cited in the DISR and IC-ESB is assigned a standard lifecycle status of either mandated or emerging. Mandated standards are required for the management, development, and acquisition of new or improved systems. Emerging standards are standards that may be implemented, but carry an inherent risk as they are not considered mature. Information Guidance documents may be cited in the DISR and are used to register guidance on implementing standards.
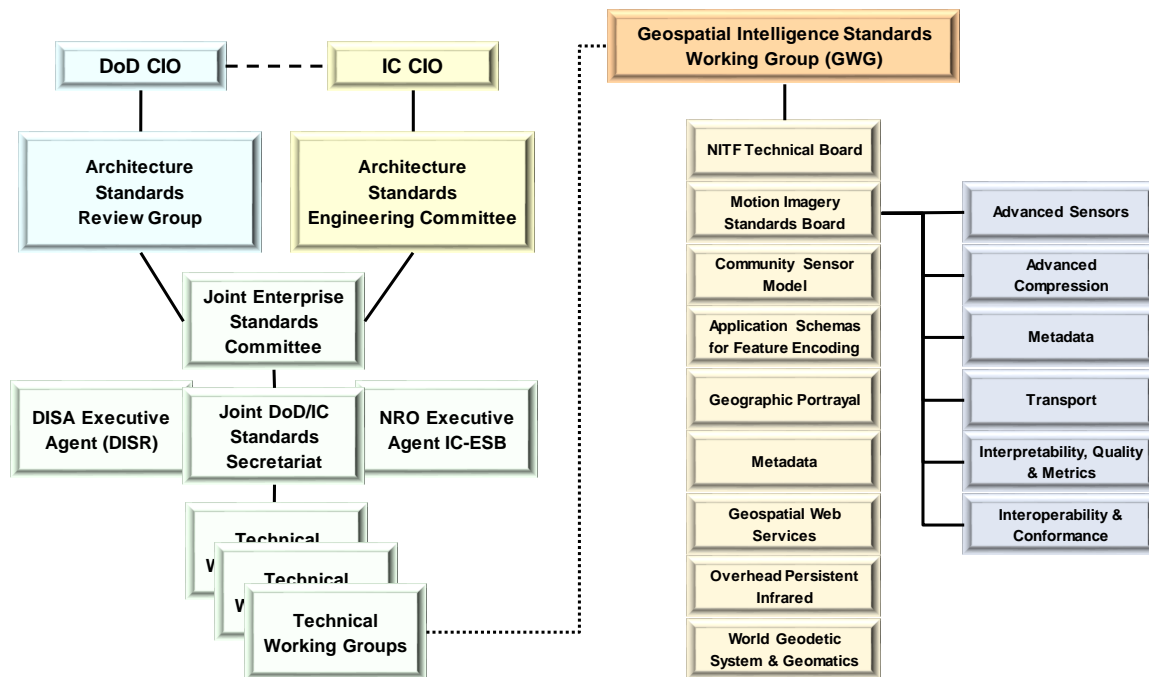

Figure 1: DoD, IC and Joint Standards Committee Structure

The GWG includes nine Focus Groups that serve as the primary mechanism for community engagement and subject matter expertise. Focus Groups both develop and adopt standards and sponsor the GEOINT standards lifecycle management adoption recommendations for GWG voting [9].

3.3.1 GWG Focus Groups

The GWG Focus Groups direct the development, evolution, and assessment of proposed and adopted GEOINT standards and related systems, technology standards for the NSG, and the associated technical architectures. They perform this function by serving as a community forum in which pertinent standards are organized into a coherent body of work and are then implemented into DoD and IC system developers' architectures. Focus Groups report their findings and make recommendations for action to the GWG. Focus Group participants work with and/or monitor key DoD/IC, Federal, Allied, Civil (national and international), and Commercial standards bodies to foster standards that address NSG service provider and end-user requirements. Because of their engagement, Focus Groups are then able to identify new standards to propose for inclusion in the DISR/ER2 by submitting a Change Request for GWG Core member voting. Change Request recommended actions include adding new mandated and emerging standards, elevating emerging standards to mandated status, and retiring standards (often to be replaced with new versions or new standards that support new technologies).

The Motion Imagery Standards Board (MISB) is the designated GWG Focus Group for Motion Imagery GEOINT.

4 Conformance, Interoperability and Performance

4.1 NSG GEOINT Functional Manager Standards Assessment (GFMSA)

In the dual roles of the DoD GEOINT Manager and the IC GEOINT Functional Manager (FM), has established the NSG GEOINT Functional Manage Standards Assessment (GFMSA) program. NSG Directive NSGD 3201 [10] *establishes the National System for Geospatial Intelligence (NSG) GEOINT Functional Manager Standards Assessment (GFMSA) program*. "The GFSMA defines and implements NSG methods and processes to assess and assert Information Technology (IT) and National Security Systems (NSS), referred to as IT, conformance with GEOINT data and service standards policies, and standards as key enablers of interoperability within the Department of Defense (DoD) and/or the Intelligence Community (IC)." The GFMSA addresses NGA's responsibility to develop interoperability test and evaluation criteria, measures, and requirements related to GEOINT DoDI 8310.01 and 8330.01 and CJCS 5123.01H, Charter of the Joint Requirements Oversight Council (JROC) and the Implementation of the Joint Capabilities Integration and Development System [11].

A N-R KPP is based on three attributes that focus on program specific, validated, verifiable performance measures that are validated by the JROC (Joint Requirements Oversight Council): 1) IT must be able to support military operations; 2) IT must be able to be entered and managed on the network; and 3) IT must effectively exchange information. D/NGA will in coordination with Joint Interoperability Test Command (JITC), the Responsible Test Organization (RTO), the Operational Test Agencies (OTAs) and the appropriate intelligence functional manager(s), develop interoperability test and evaluation criteria, measures and requirements related to GEOINT.

The objective of the GFMSA program is to promote a standards-based interoperable working environment throughout the NSG enterprise. The GFMSA process enables program and project

managers to confirm that the required GEOINT capability is delivered. Within NGA/TCAG, the GEOINT Standards Group acts as an assistance and outreach body composed of subject matter experts in the field of GEOINT (and associated metadata) standardization and architecture deployment.

4.2   Conformance

The MISP establishes standards and guidance that support Motion Imagery Systems to include: Motion Imagery (MI), metadata, audio, transport, protocols, MI workflow, etc. that further interoperability. For standards to be effective a regimen of conformance must be established. DoD/IC/NSG MI systems must comply with the mandated standards specified in the Motion Imagery Standards Profile (MISP).

Conformance testing and interoperability assessments for a specific standard must encompass the suite of mandated standards and profiles upon which it is built. Standards conformance certification is based on the technical requirements of the standard under evaluation. Standards testing is more technical than operational, but testing must be robust enough to fully evaluate conformance to the standard and must be on mature production-representative hardware and software.

There are multiple facets to consider in approving conformance to a standard. A function or subsystem within a larger system may meet the criteria of a standard; that is, it performs its function as the standard directs. This does not guarantee however that the function when inserted into a system of systems will meet the conformance requirements for the overall system. Certification of a function, or subsystem is but one hurdle that must be met towards ensuring a system using a function meets a required capability and achieves a desired level of interoperability.

NGA is responsible for conformance testing to GEOINT standards per the GFMSA program, and MISB has developed a coordinated community test program for Motion Imagery standards that will enable Service-level labs and other designated test facilities to conduct conformance testing at their designated sites. The NGA Conformance Program for Motion Imagery [14] defines the roles and responsibilities of a Test Customer, a Test Agency, the MISB, and the GFMSA program, all of which participate in the process of determining conformance. Results from conformance testing will feed into NGA's GFMSA program and will ultimately become part of NGA's input on GEOINT conformance to JITC's overall Interoperability Certification process on a per program basis.

4.3   Interoperability

Per DoDI 8320.02 *Sharing Data, Information, and Information Technology (IT) Services in the Department of Defense*:

- "Data, information, and IT services are considered enablers of information sharing to the DoD. Data, information, and IT services will be made visible, accessible, understandable, trusted, and interoperable throughout their lifecycles for all authorized users.
- All DoD activities implement applicable standards and specifications as cited in the DoD IT Standards Registry (DISR) …

- All information sharing enablers must comply or conform to applicable standards and specifications as registered in the DISR or receive a waiver …

- Data, information, and IT services will be made visible to authorized users by creating and associating metadata, including discovery metadata, for each asset. DoD metadata standards must comply with applicable national and international consensus standards for metadata exchange whenever possible. Discovery metadata must conform to the DoD Discovery Metadata Specification. All metadata will be discoverable, searchable, and retrievable (to the maximum extent allowed by law or DoD policy) using DoD-wide capabilities and tools."

Under the authority and direction of the DoD CIO, the Director/DISA shall direct DISA's Joint Interoperability Test Command to evaluate joint IT and NSS interoperability for the DoD, and serve as the Joint Interoperability Certification Authority for the DoD certifying all joint IT and NSS for interoperability, using the Net-Ready Key Performance Parameter (NR KPP), when applicable, as the basis for test. DISA is directed by DoDI 8330.01 to "leverage previous, planned, and executed DT&E and OT&E tests and results to support joint interoperability test certification and eliminate duplication" so programs should plan on combined testing to the maximum extent possible. "Coordinates with Director, NGA on all geospatial intelligence (GEOINT) related interoperability certifications".

Certification of programs implementing capabilities and technologies documented through DISR and ER2 IC-ESB registered standards are governed by DODI 8310, DoDI 8330, DoDI 5000.02 [12] and DoDI 8100.04 [13].

4.4 Performance

For DoD/IC/NSG standards to achieve interoperability objectives, systems procured for the DoD/IC/NSG must have NGA-endorsed conformance certification to warrant that the systems conform to applicable standards. A system that earns certification means that all attributes and qualifiers as specified by the requirements have been tested to their prescribed specification. This does not mean that when such a capability is fielded it will be able to meet the requirements for its intended application; that is, the performance is governed by the usage and other system parameters. Such performance metrics are often accessed in fielded operational exercises.

Appendix A   References

[1]   DoD Memorandum, Joint Enterprise Standards Committee Charter, Mar 2013.
[2]   DoD Instruction 3115.15, Geospatial Intelligence (GEOINT), May 2018.
[3]   DoD Directive 5105.60, National Geospatial-Intelligence Agency (NGA), Jul 2009.
[4]   Executive Order (EO) 12333, United States Intelligence Activities, Apr 2008.
[5]   DoD Instruction 8310.01, Information Technology Standards in the DoD, Jul 2017..
[6]   DoD Instruction 8320.02, Sharing Data, Information, and Information Technology (IT) Services in the Department of Defense, Aug 2013.
[7]   DoD Instruction 8330.01, Interoperability of Information Technology (IT), Including National Security Systems (NSS), Dec 2017.
[8]   Intelligence Community Directive Number 113, Functional Managers, May 2009.
[9]   GWG Annual Report 2011.
[10]   NSGD Directive 3201, The Geospatial Intelligence (GEOINT) Functional Manager Standards Assessment (GFMSA) Program, Jun 2015.
[11]   CJCSI 5123.01H Charter of the Joint Requirements Oversight Council (JROC) and the Implementation of the Joint Capabilities Integration and Development System, Sep 2018.
[12]   DoD Instruction 5000.02, Operation of the Defense Acquisition System, Oct 2019.
[13]   DoD Instruction 8100.04, DoD Unified Capabilities (UC), Dec 2010.
[14]   NGA Conformance Program Plan for Motion Imagery_1.1, Nov 2018.

Appendix B   Acronyms

CI	Counter Intelligence
CIO	Chief Information Officer
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
COCOM	Combatant Command
DDI	Director of Defense Intelligence
DISA	Defense Information Systems Agency
DISR	DoD IT Standards Registry
DNI	Director of National Intelligence
DoD	Department of Defense
DoDD	Department of Defense Directive
DoDI	Department of Defense Instruction
DT&E	Developmental Test and Evaluation
EO	Executive Order
GEOINT	geospatial intelligence
GFMSA	GEOINT Functional Manager Standards Assessment
IC	Intelligence Community
IC-ESB	Intelligence Community – Enterprise Standards Baseline
ICD	Intelligence Community Directive
IT	Information Technology
JROC	Joint Requirements Oversight Council
KPP	Key Performance Parameter
MIP	Military Intelligence Program
MISB	Motion Imagery Standards Board

MilDep   Military Department
MISP   Motion Imagery Standards Profile
NGA   National Geospatial-Intelligence Agency
NIP   National Intelligence Program
N-R KPP   Net-Ready Key Performance Parameter
NSG   National System for Geospatial Intelligence
NSS   National Security System
OCI   Office of the Chief Information Officer/Enterprise Architecture and Standards
ODNI   Office of the Director of National Intelligence
OT&E   Operational Test and Evaluation
RTO   Responsible Test Organization
USD(I)   Under Secretary of Defense for Intelligence

Appendix C   Definitions

Commercial Industry Standard: A national or international standardization document developed by a private sector association, organization, or technical society that plans, develops, establishes, or coordinates standards, specifications, handbooks, or related documents, i.e. International Organization for Standards (ISO), American National Standards Institute (ANSI, Open Geospatial Consortium (OGC), (add SIMPTE). This term does not include standards of individual companies which are properly referred to as specifications.

Conformance: Confirmation by testing that a system, product, IT service, or interface adheres to a standard, standards profile, or specification.

DoD GEOINT Manager: D/NGA's role as prescribed by DoDD 5105.60 to conduct all GEOINT activities delegated under the authorities of the SECDEF and Undersecretary of Defense for Intelligence [USD(I)] in accordance with NGA's statutory missions under Titles 10 and 50 United States Code.

Enterprise Architecture: A strategic information asset base that defines the mission, technology, and information necessary to perform the mission and a transitional process for implementing new capabilities in response to changing needs.

IC Functional Manager (FM): FMs are the principal advisors to DNI on the performance of their respective functions, and they serve as the cognizant authorities with respect to the overall performance of their functions within and across IC elements and activities as further described in ICD 113.

Geospatial Intelligence (GEOINT): The exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. GEOINT consists of imagery, imagery intelligence, and geospatial information (section 467 of Reference (a)). GEOINT collection encompasses all aspects of: literal, infrared (IR), and synthetic aperture radar (SAR) imagery; overhead persistent infrared capabilities; and geospatial information and services. The terms imagery intelligence and advanced geospatial intelligence are encompassed within this definition of GEOINT. GEOINT includes the exploitation and analysis of electro-optical, IR, and radar imagery; and of geospatial, spectral, laser, IR, radiometric, SAR phase history, polarimetric, spatial, and temporal

data. It employs all ancillary data, signature information, and fused data products, as necessary. Integrated GEOINT products may also include data and information from collateral sources.

GEOINT Standard: A GWG documented and JESC approved agreement containing technical specifications or other precise criteria used consistently as rules, guidelines, or definitions of characteristics to ensure materials, products, processes, or services are fit for the analysis and visual representation of physical features and geographically referenced activities.

Military Intelligence Program (MIP): The funding program consisting of programs, projects, or activities that support SECDEF's intelligence, counter intelligence (CI), and related intelligence responsibilities. This includes those intelligence and CI programs, projects, or activities that provide capabilities to meet warfighters' operational and tactical requirements more effectively. The NGA MIP, for which D/NGA is Program Manager, provides resources for joint defense-wide assets, activities, and personnel that provide GEOINT and related support to multiple DoD components.

Motion Imagery System: a system that provides the functionality of collecting, encoding, processing, controlling, disseminating, exploiting, viewing, and/or storing Motion Imagery.

National Geospatial-Intelligence Program (NGP): The GEOINT component of the National Intelligence Program under DNI. D/NGA is the NGP Program Manager.

National System for Geospatial Intelligence (NSG): the NSG is a community that manages, administers, and governs the geospatial intelligence (GEOINT) discipline and is responsible for developing doctrine, which informs and guides the activities of the NSG members in an integrated, collaborative, multi-domain environment. This includes the prescription of tradecraft, reporting, and interoperability standards and coordination through applicable Department of Defense and Intelligence Community channels. The NSG is more than a collection of organizational representatives. It is a combination of technology, policies, capabilities, doctrine, activities, people, and communities necessary to produce GEOINT in an integrated, multi-intelligence, multi-domain environment.

NSG Community Members: NSG community members include the Intelligence Community, the military services, the Joint Staff and Combatant Commands, and elements of the federal community.

NSG Community Partners: NSG Partners include Civil Applications Committee Members, International Partners, Industry, Academia, Defense Service Providers, and Civil Community Service Providers.

Profile: A set of one or more standards and where applicable the set of chosen classes, subsets, options, and parameters of those standards necessary to accomplish a function.

Standards: Common, repeated and mandatory use of rules, conditions, guidelines, or characteristics for products, or related processes and production methods; and related management systems practices.

Standards Baseline: A registry of prescribed capabilities for mandated and emerging enterprise standards and profiles best suited for achieving interoperability and information sharing across the enterprises.